Evolving Patterns of Feed Grain Trade

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Abstract: As the dominant exporter of feed grains, the United States is more affected than other exporters by changing patterns of global trade. Growth in demand for feed grains and other bulk exports has remained flat over time, and bulk agricultural exports have declined relative to exports of processed agricultural products. Export volumes of U.S. feed grains have fluctuated substantially, but their underlying trend has remained near 55 million tons. Export prices for U.S. feed grains (in 1995 dollars) have declined from the high of $226 a ton in 1975 to $54 a ton in 1999. Feed grain markets have shifted from Europe to Asia as income growth has transformed Asian diets toward meats and poultry. Productivity growth in U.S. agriculture has allowed U.S. farmers to produce feed grains competitively and maintain an approximate world market share of 50 percent.

Keywords: Feed grain trade, U.S. exports, Asian markets, patterns of trade.

The United States has been the dominant exporter of feed grains for the past 37 years, accounting for approximately 50 percent of world exports, on average. Feed grains are an important component of U.S. agricultural exports, but they have declined from almost 14 percent of the value of agricultural exports in 1962 (and peaks of 23 percent in 1976 and 21 percent in 1980) to about 9 percent in 1999.[2] The decline is part of an overall decline in the share of total agricultural exports held by bulk products and reflects rising demand for processed products as incomes increase around the world.

A drop in real export unit values primarily caused the decline in value.[3] Thus, the value of feed grain exports in nominal dollars has fallen more than the quantity. From the 1980 peak to 1999, U.S. feed grain exports have fallen from $9.8 billion to $5.5 billion in value and from 73 million tons to 58 million tons in volume. The nominal unit value has declined from a high of $145 a ton in 1962 to $95 in 1999.

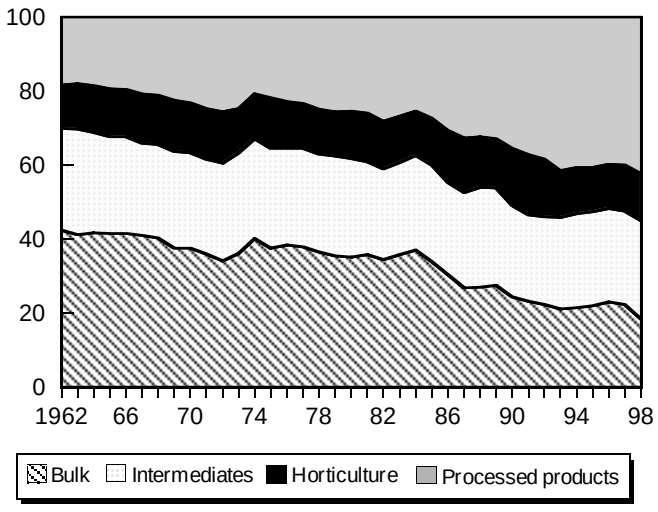
Feed Grain Trade in a Global Context

U.S. feed grain exports are part of an evolving pattern of global agricultural and merchandise trade. An increasing part of world agricultural trade involves high value and processed agricultural products (fig. A-1). The biggest shift is the substitution of processed products for bulk products. In 1962, more than 40 percent of world agricultural trade was bulk products such as grains, oilseeds, cotton, and unprocessed tobacco. Processed products accounted for less than 20 percent of agricultural trade. By 1998, these proportions had completely reversed, with bulk commodities accounting for less than 20 percent and processed products accounting for more than 40 percent. Intermediate and horticultural products maintained their relative importance rather than growing or declining in importance.

The transformation of agricultural trade from bulk to processed products is the consequence of several factors.

Figure A-1

World agricultural export shares



Source: UN COMTRADE Database.

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[2] The data used for this paper are drawn from the FATUS database on U.S. agricultural trade, and are available on the ERS website: www.ers.usda.gov. In general, calendar year data are used. Data for world trade are drawn from the UN Comtrade database and include intra-EU trade.

[3] The real unit value is the current value of exports divided by the quantity of exports adjusted for changes in overall prices as measured by the GDP deflator.

The growth in real world per capita income (in 1995 dollars), from an average of $2,851 in 1962 to $5,696 in 1999, has led to increased demand for processed over bulk commodities from households around the world. Furthermore, improved transportation, declining shipping costs, and improved communication, along with reduced regulatory barriers to processed agricultural trade have provided both a cost advantage and stimulated demand for more processed commodity trade.

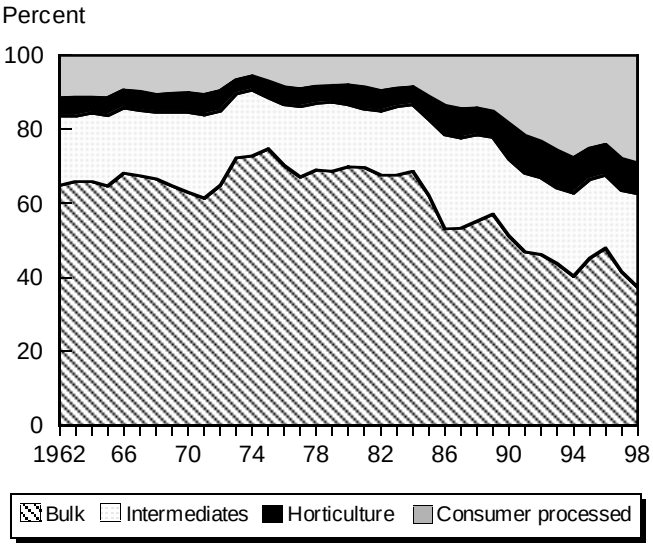
The United States has a comparative advantage in bulk production and exports, but the overriding global trends have affected U.S. agricultural trade as well (fig. A-2). From more than 60 percent of U.S. agricultural exports in 1962, bulk exports fell to below 40 percent by 1998. Bulk export volumes have not declined, but exports of processed products have grown faster. While the composition of world trade in agricultural exports has changed gradually since 1960, the change in U.S. export composition has mostly occurred since 1985.

The increased importance of processed product trade does not necessarily imply that less primary agricultural products are being used for export. Rather, the form of the exports has changed. For example, about 10 million metric tons of corn were used in exported animal products in 1998/99. One can think of meat exports as processed grains. Improved transportation, refrigeration, and handling of meat products have allowed feed grains to be exported more efficiently in a higher value product.

Grains represent about half the value of bulk exports and feed grains comprise about half of grain trade (fig. A-3). Over time feed grains have become a more important part of grain trade. Rising incomes have generated increased demand for meats as part of the diet. This has led to increased livestock production around the world, raising demand for feed grains.

Figure A-2

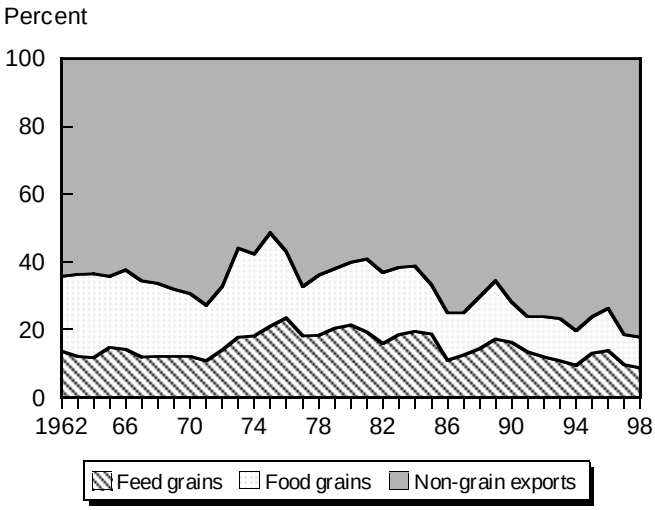
U.S. agricultural export shares



Source: Foreign Agricultural Trade of the United States, Calendar year 1999 (FATUS, 1999).

Figure A-3

Share of grains in total U.S. agricultural exports



Source: Foreign Agricultural Trade of the United States, Calendar year 1999 (FATUS, 1999).

Sources and Destinations of Feed Grain Trade

The United States has been and continues to be the dominant supplier of world feed grains, primarily corn (fig. A-4). Other feed grains—oats, barley, and sorghum—make up less than 10 percent of U.S. exports. Although the U.S. share of world feed grain trade has fluctuated significantly since 1962, there is no observable trend in the data. Part of the reason for the fluctuations has been China's move from an exporter to an importer and back again to an exporter.

The decline in the U.S. share in the last several years could be partially due to the Asian crisis. Asian markets have become increasingly important to the United States and the financial constraints operating in several of those countries, including Korea and Japan, hurt U.S. feed grain exports more than some other countries' exports to other destinations. With the Asian financial crisis waning, Asian feed grain demand is expected to resume.

After the United States, the EU is the second largest feed grain exporter. Intra-EU trade accounts for about 80 percent of EU feed grain exports. The concentration of European feed grain exports is a direct result of the Common Agricultural Policy (CAP), which has provided significant barriers to imports into the EU, while removing all barriers to trade between EU countries. The diversion of trade by the

CAP is one of the most prominent features of agricultural trade of the past 37 years.

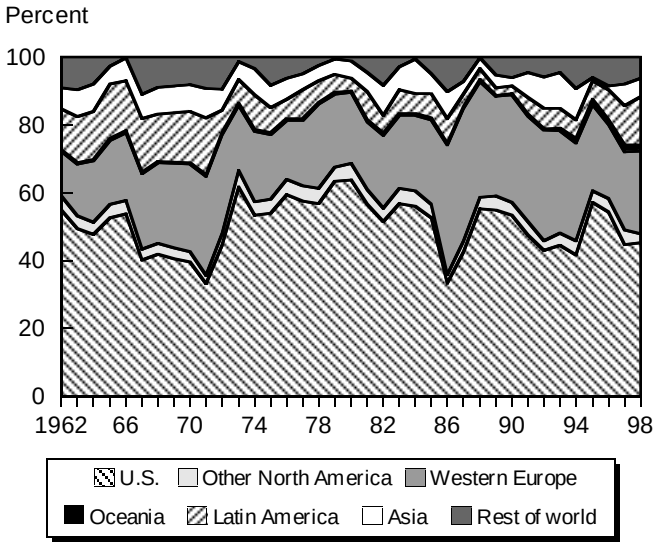
One of the most dramatic changes in agricultural trade has been in the destinations of U.S. grain exports (fig. A-5). More than 70 percent of U.S. feed grain exports went to Europe in 1962. By 1999, less than 1 percent went to Europe. In the meantime, Asia and Latin America emerged as important markets for U.S. feed grains, expanding to nearly 90 percent from 15 percent in 1962. The East Asian countries of Korea, Taiwan, and Japan are now the most important markets, taking more than 50 percent of U.S. sales. Mexico has also emerged as a very important market, accounting for more than 25 percent of feed grain sales to Latin America.

The shift in feed grain markets represents one example of the dynamic transformation of the global economy. The rapid growth of the Asian economies since the 1960's has contributed to increasing Asian demands for meat and meat products.

An interesting, but smaller part of the feed grain story is what happened to U.S. feed grain exports to the former Soviet Union (FSU). Before 1972 and after 1992, the United States exported virtually no feed grains to the FSU. However, between 1972 and 1992, the FSU accounted for between 10 and 25 percent of U.S. overseas sales. During those years, economic misallocation and inefficiencies characterized the FSU, and its large agricultural imports were as much a symptom of the artificially low food prices under the Communist system as a measure of underlying demand for feed imports. With the demise of the Communist system in the early 1990's, the FSU's import demand for feed grains evaporated as fast as it began.

Figure A-4

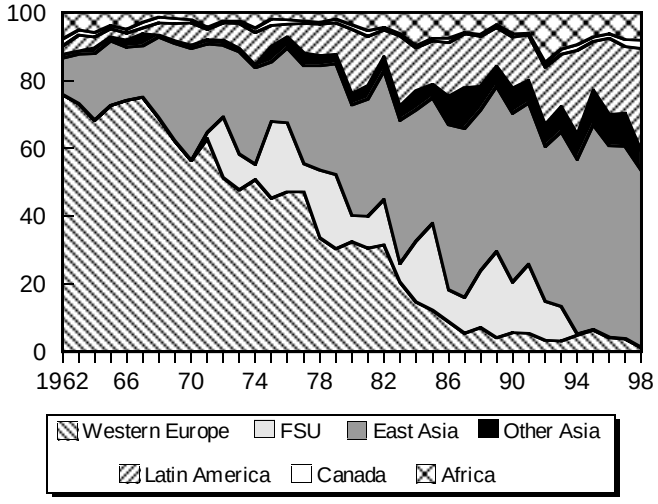
Sources of world feed grain exports: The U.S. is the dominant exporter



Source: UN COMTRADE Database.

Figure A-5

U.S. feed grain export destinations: Asia is in, Europe is out



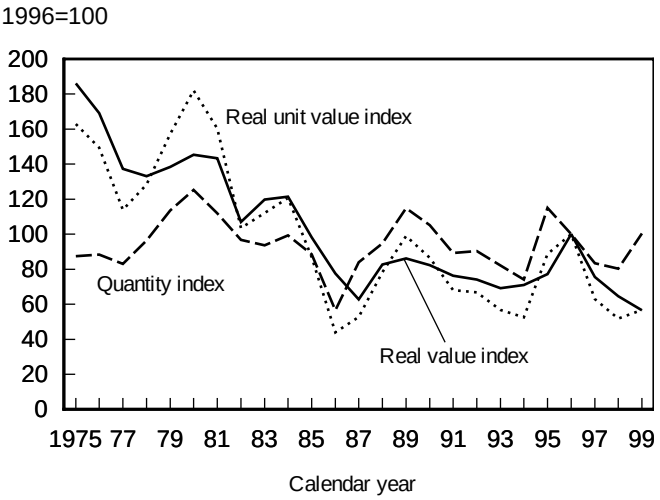
Source: Foreign Agricultural Trade of the United States, Calendar year 1999 (FATUS, 1999).

Trends in Feed Grain Prices, Values, And Quantities

The overall trends in feed grain export values mask the divergent paths taken by real unit values and export volume (fig. A-6). The real price of feed grain exports has declined substantially, leading to declines in the real value of exports. U.S. feed grain exports totaled slightly more than 50 million

Figure A-6

The value of U.S. feed grain trade prices has fallen faster than quantites



Source: FATUS 1999 adjusted to an index basis.

metric tons in 1962 and were slightly under 60 million metric tons in 1999. The real price of U.S. feed grain exports (in 1996 dollars) declined from a high of $226 per ton in 1975 to a low of $54 in 1999. Even in nominal terms, the export unit value of feed grains declined from $121 a ton in 1975 to $95 in 1999. Relatively little growth in export volume and declining real unit values caused the overall real value of U.S. feed grain exports to decline substantially.

Conclusion

Feed grains continue to be an important agricultural export for the United States. With approximately 50 percent of world feed grain exports, the United States is particularly sensitive to evolving trends in agricultural trade that favor processed products over bulk commodities. The quantity of feed grain exports has been relatively stagnant, showing no real trend over time, but the destinations for feed grains have changed dramatically. The preponderance of U.S. feed grain exports went to Europe in the 1960's, but by the 1990's, the majority was shipped to East Asia. The relative decline in the value of feed grain exports in total U.S. agricultural exports is explained more by the decline in real prices than by the change in quantities. Given the four-fold decline in prices, the continued ability of feed grain producers to produce and export is a testament to their increased productivity. The increase in yield per acre of feed grains has helped compensate for declining prices.

As incomes per capita increase, there is a natural tendency for individuals to change their diets from a high concentrations of grains and tubers to more meat products. At very high income levels, the diet moves toward more horticulture and processed products. The economies of the two most populous countries, India and China, have been growing at very high rates over the last decade. At some point, the impact of growing income will translate into an increased demand for meat and poultry products. This should stimulate demand for feed grains for the growing livestock production in those countries and raise demand for meat and poultry imports. This translates into more feed grains being exported both directly and indirectly.